

Protecting Mother and Children from Air Pollution in China

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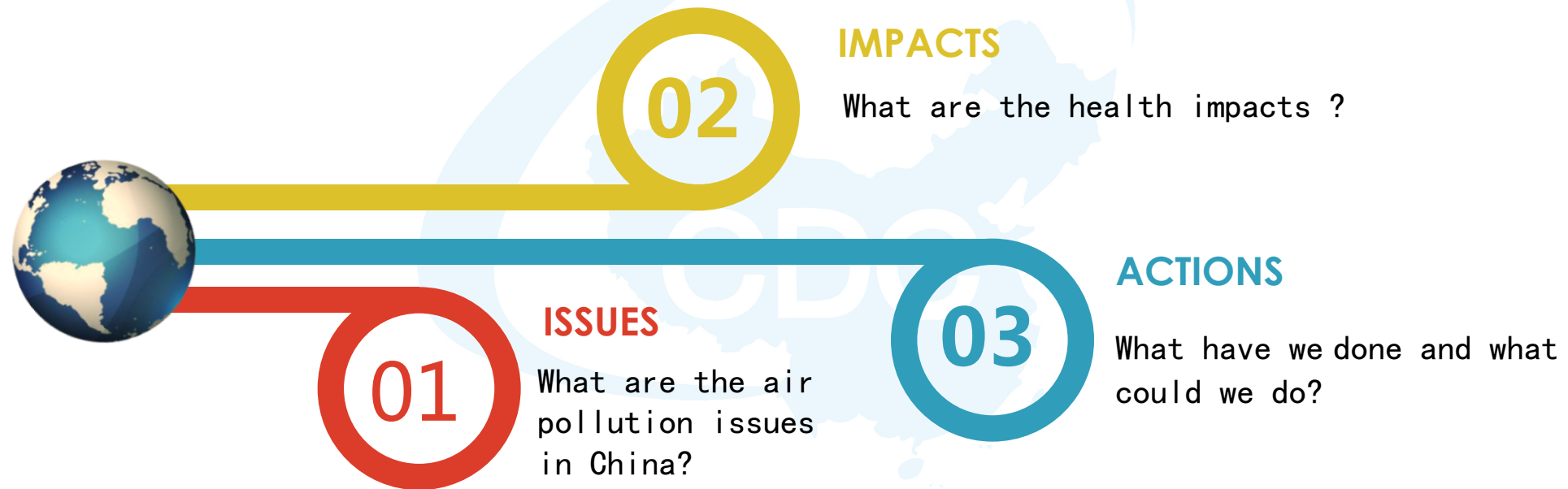
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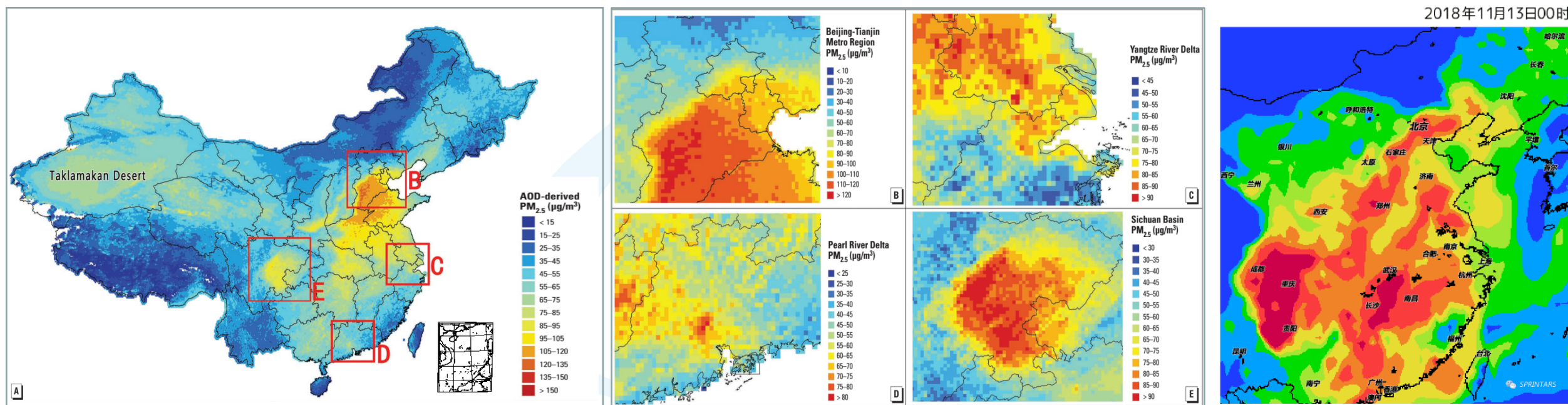
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What are the air pollution issues in china?

	SOURCE	POLLUTANT
AMBIENT AIR POLLUTION	Use of fossil fuel Industrial emission Traffic pollution Plant or garbage burning	PM _{2.5} , PM ₁₀ , SO ₂ , NO _x , PAH, TCDD, O ₃ , CO
INDOOR AIR POLLUTION	Use of coal and biomass fuels Construction, decorative materials and furniture Cooking, parents smoking, incense burning Use of household cleaning products	PAH, NO ₂ , CO, PM ₁₀ , PM _{2.5} Lead, PCBs, NH ₃ , HCHO, VOCs, SVOCs COFs, VOCs, SVOCs, PM, PAH HCHO, VOCs, SVOCs

Ambient Air Pollution in China

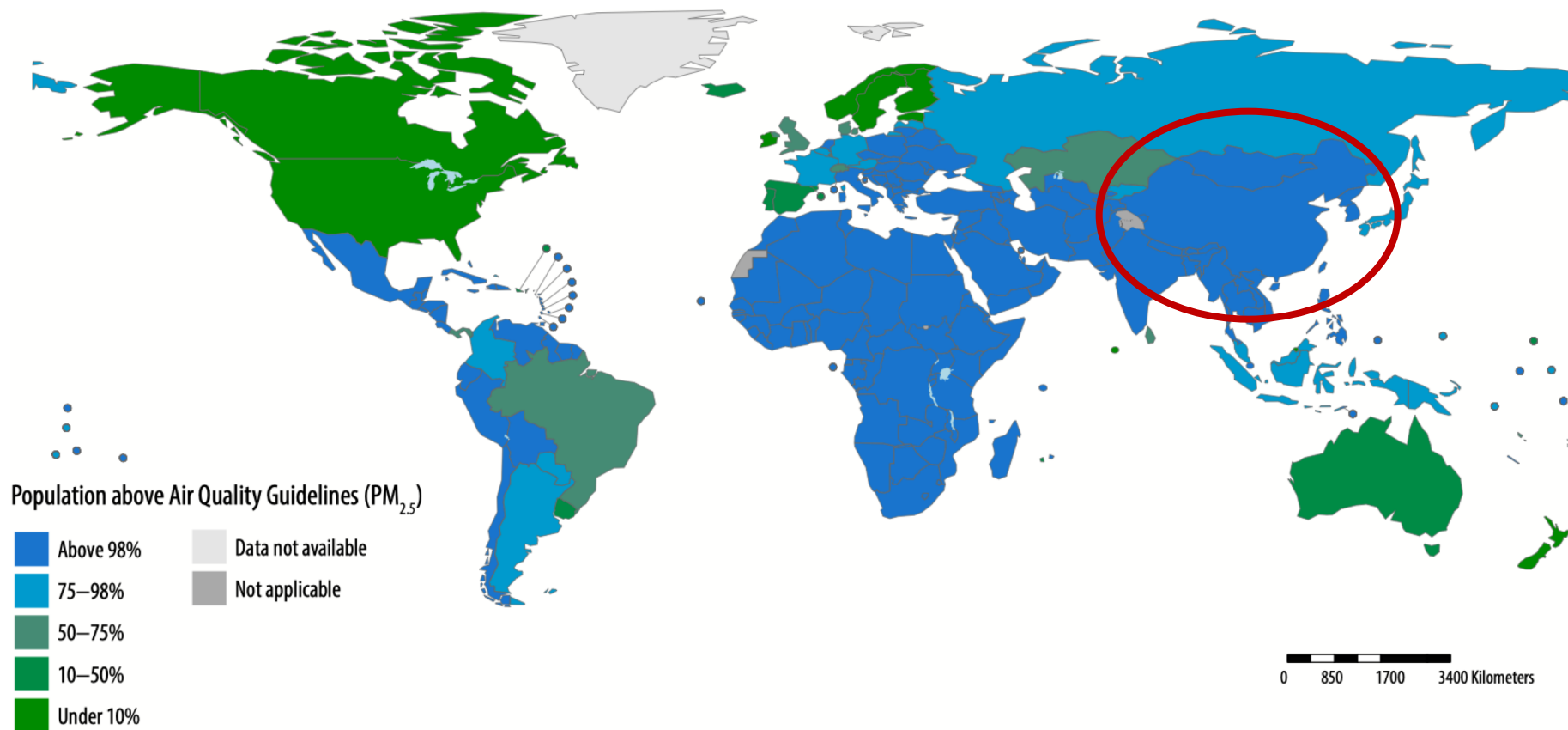


From 2004 to 2013 :

Beijing-Tianjin-Hebei— Ten year average concentrations of $PM_{2.5} \geq 100 \mu g/m^3$, Maximum of $PM_{2.5} \geq 120 \mu g/m^3$

Yangtze River Delta and Sichuan Basin— Ten year average concentrations of $PM_{2.5} \geq 85 \mu g/m^3$

Proportions of children under 5 years living in areas in which the WHO air quality guidelines (PM_{2.5}) are exceeded, by country, 2016



Indoor air pollution in China

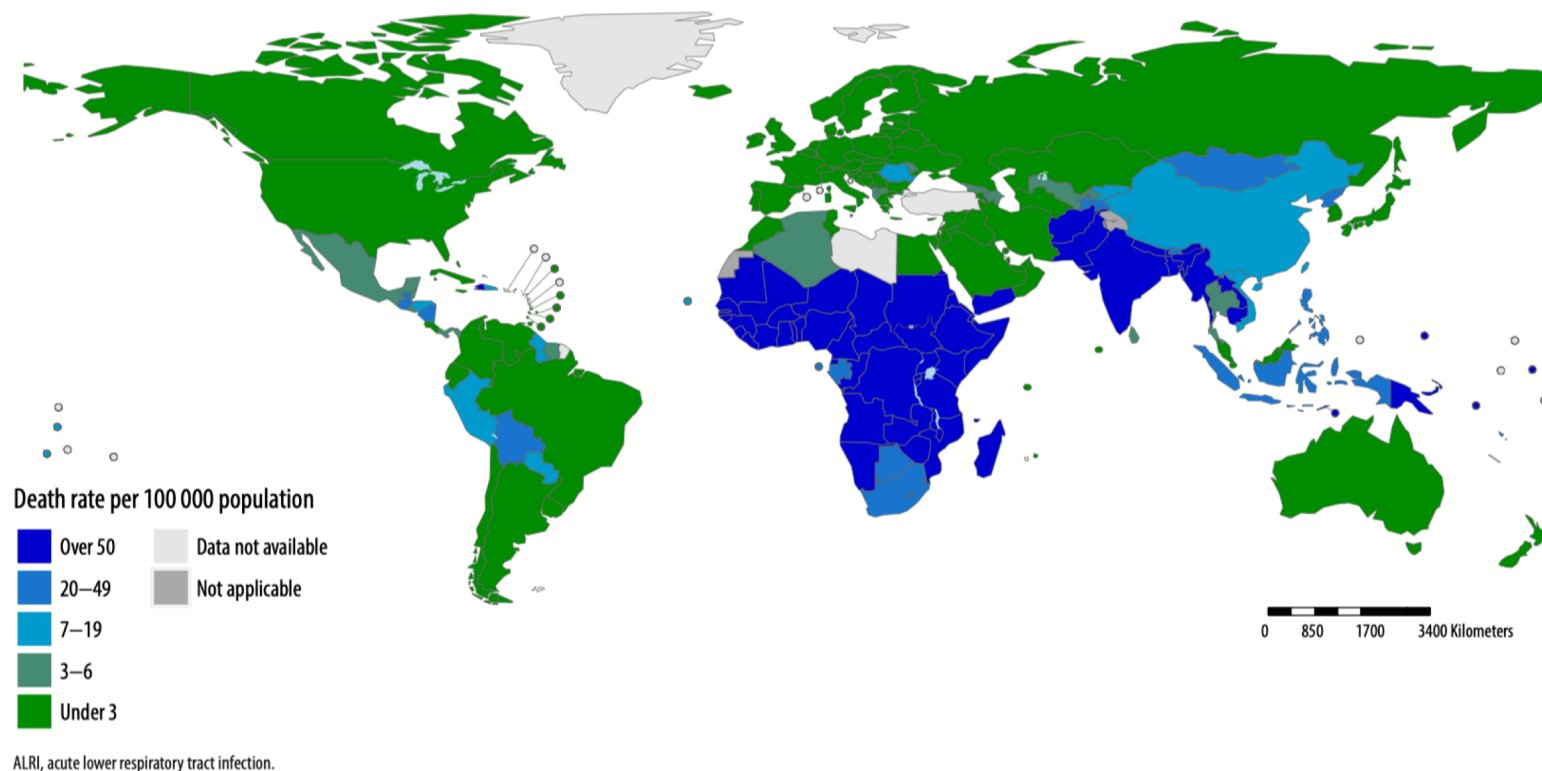


Passive smoking: 79.2% children, 2014

Solid fuels: heating of 30% households; 600 million Chinese cooking, 2016

More than 50% of child mortality due to ALRI as a joint effect of household and ambient air pollution, 2016,

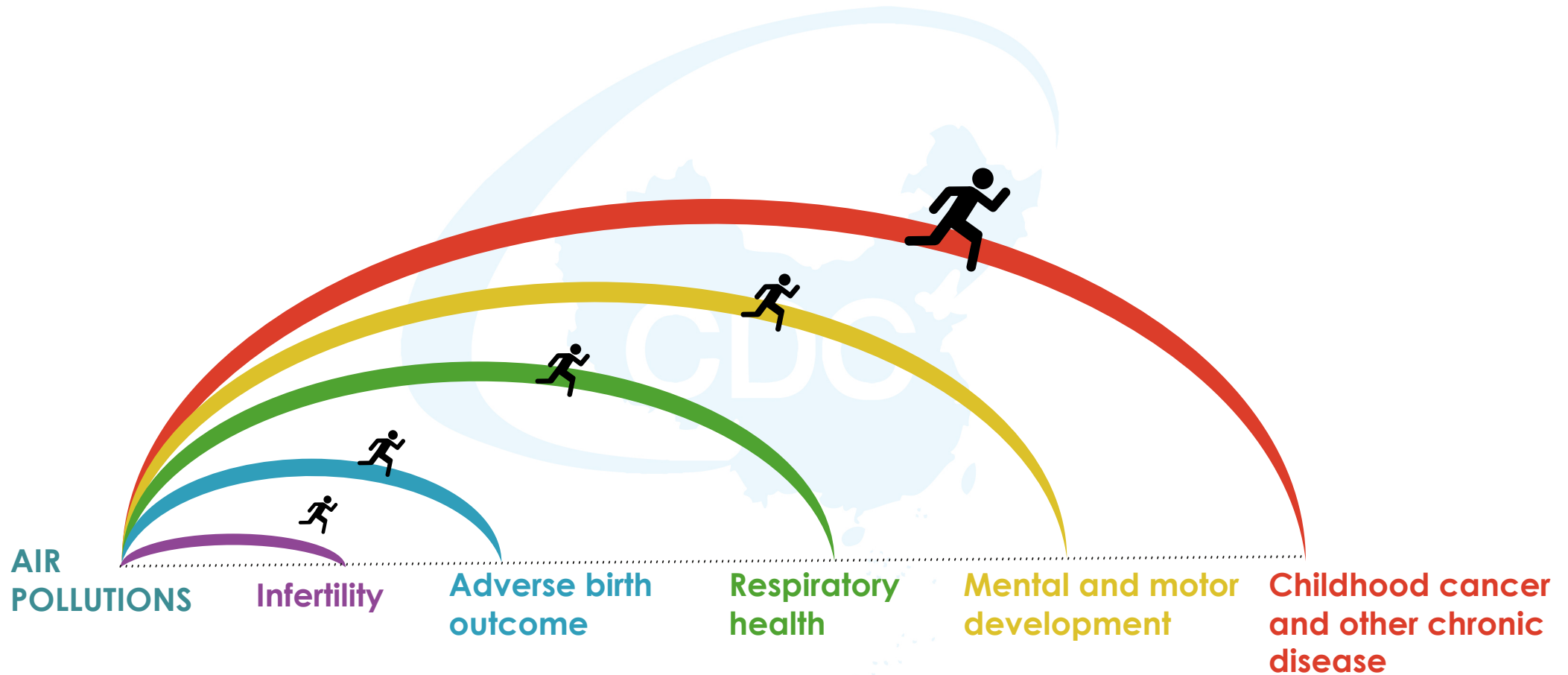
Fig. 3. Death rate per 100 000 population from ALRI due to household air pollution in children under 5 years, 2016



Association of ambient air pollution with birth outcomes

Studies (PY)	sites	period	size	pollutants	Birth outcome	Results
Wu H, et al (2017)	Jinan	2014~2016	43,855 term births	PM _{2.5} , SO ₂ , NO ₂	Low Birth Weight	10 µg/m ³ increment PM _{2.5} The third trimester :OR =1.17(1.05, 1.29) The entire pregnancy: OR =1.38(1.07, 1.77)
Yang S, et al (2018)	Wuhan	2011~2013	95,354 births	PM _{2.5} , PM ₁₀ , SO ₂ , NO ₂ , O ₃ , CO	Still birth	10 µg/m ³ increment : PM _{2.5} :1.01(1.00-1.01) PM ₁₀ :1.08(1.04-1.11) NO ₂ :1.13(1.07-1.21) SO ₂ :1.26(1.16-1.35)
Li X, et al (2018)	Shiyan and Jingzhou, in Hubei province	2014~2016	16,527 live newborns	PM _{2.5} , PM ₁₀ , SO ₂ , NO ₂ , O ₃ , CO	Preterm Birth	10 µg/m ³ increasement : Shiyan: PM _{2.5} :1.066(1.027-1.106) PM ₁₀ :1.08(1.04-1.11) Jingzhou: PM _{2.5} :1.01(1.00-1.01) PM ₁₀ :1.08(1.04-1.11)
Han Y, et al (2018)	Suzhou	2013~2015	14,455 births records	PM _{2.5} , PM ₁₀	Birth Weight	1. PM _{2.5} : decrease the infant birth weight by 4.94 g 2. PM ₁₀ : decrease the infant birth weight by 5.65g
Xiao Q, et al (2018)	Shanghai	2011~2014	132,783 singleton live births	PM _{2.5}	Birth Weight, Preterm Birth	Birth Weight:-12.85 g Preterm Birth :OR=1.27(1.20-1.36) LBW:OR=1.22(1.06-1.41)
Wang Y, et al (2018)	National Wide	2016~2017	1,300,342 singleton live births	PM ₁	Preterm Birth	10 µg/m ³ increase in PM ₁ : PTB:1.09(1.09-1.10) Very PTB:1.20(1.18-1.23)

What are the health impacts?





What have we done?

✓ 2011:

Program for the development of children in China (2011-2020)

✓ 2013:

Action Plan for Prevention and Control of Air Pollution (“Ten Measures”)

New air-monitoring standard in 2013

✓ 2016:

The Environmental Protection Tax Law of People's Republic of China

Healthy China 2030

✓ 2018:

Ministry of ecological environment

Amendment of the environmental impact assessment law

✓ 2019:

Healthy China initiative (2019-2030)

Action Plan for Prevention and Control of Air Pollution (“Ten Measures”)

1.Reducing emissions

2. Rein in energy intensive and highly polluting industries

3. Vigorously promote clean production, promote public transport

4. To speed up the adjustment of energy structure, increase the supply of clean energy



5. Strengthen energy conservation and environmental protection index constraints

6. Carry out new mechanism of incentive and constraint and energy conservation and emissions reduction

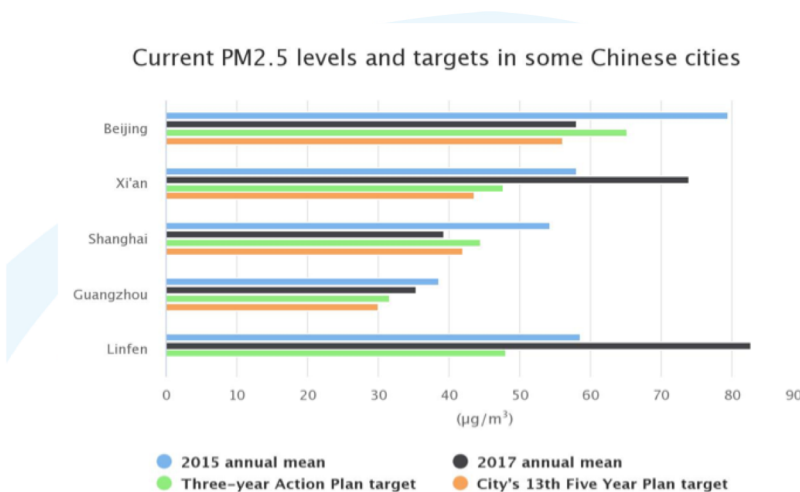
7. Prompting industrial transformation and upgrading by law and standard

8. Prompting industrial transformation and upgrading by law and standard:

9. Bring heavy pollution weather into the local government emergency management

10.The local government overall responsibility for local air quality

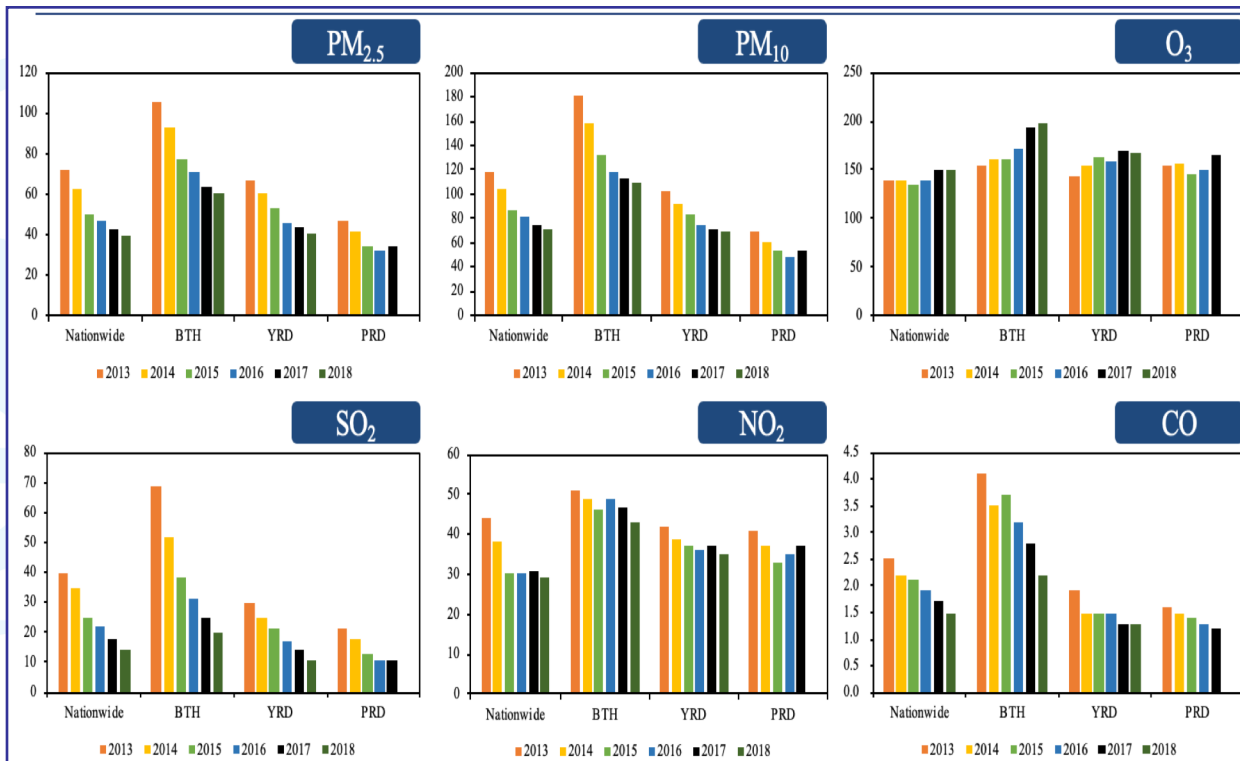
Three-year Plan on Defending the Blue Sky: 2018



2020
vs
2015

- 1 The total emission of SO₂ and NO₂ decreased by more than 15%
- 2 The urban PM_{2.5} and above was down by more than 18%
- 3 The ratio of air quality to the grade and above was 80%
- 4 The ratio of severe and above pollution days was down by 25%

New air-monitoring standard in 2013



Since 2013, the hourly data of air pollutants are released. 1497 monitoring sites in 367 cities.

There is a significant downward trend from 2013 to 2018 of the concentrations of major air pollutants, except O_3

Health China Vision 2030

Five Specific Targets



2019, Health Environment Promotion Action

Core Health Indicators

Ensuring “environmental health”

One of the main goals, and based on the blueprint, by 2030,

- The good air quality rate for all cities at the prefecture level or above should reach 80%;
- The rate of surface water quality better than III should reach 70%



Pilot online air quality monitoring in some schools



Ambient air quality and health monitoring since 2013 sponsored by NHC, 43 sites in 2013; 152 sites in 2019

State Council: Program for the development of children in China (2011-2020)

SAMR: Children and Students Utensils Safeguarding Action Scheme 2019

What could we do?

- To develop the national action plan for children's environmental health (2020-2025)
- To establish a children environmental health indicator system in China.
- To conduct awareness raising campaign on children's environment and health.
- To develop guidelines on children's environment and health for children and parents.
- To study and intervene air pollution related disease:
pre-pilot ➤ pilot ➤ intervention



THANKS FOR LISTENNING !